NATO Advanced Research Workshop

METALLIC MATERIALS WITH HIGH STRUCTURAL EFFICIENCY

Dates: September 07-13, 2003
Subject: **Metallic Materials with High Structural Efficiency**
Type: Conference
Location: Kyiv, Ukraine
Sponsor: **The North Atlantic Treaty Organization**
Co-Sponsors:
- **European Office of Aerospace Research and Development**
- **Air Force Office of Scientific Research;** • **Air Force Research Laboratory**
- **Office of Naval Research**
- **UES, Inc.**
- **Frantcevych Institute for Problems of Materials Science**
- **Science and Technology Center of Ukraine**
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Local Program Committee:
Oleksandr Vasylyev; Leonid Kulak; Valentyna Avdeyeva (IPMS, Ukraine)

ARW Directors:
Oleg Senkov, UES, Inc., Materials & Processes Division, USA. Phone: +1-937-255-1320;
E-mail: oleg.senkov@wpafb.af.mil
Sergiy Firstov, Frantcevych Institute for Problems of Materials Science, Ukraine. Phone: +380 44 424 3501;
E-mail: fsa@materials.kiev.ua

Conference Secretaries:
Oleksandr Koval (IPMS, Ukraine) and Kelly Brown (UES Inc., USA)

Description:
The Advanced Research Workshop "Metallic Materials with High Structural Efficiency" will provide an interactive forum to:

- Discuss the progress and problems in development of metallic materials with high specific mechanical properties
- Exchange with ideas for development of highly efficient discontinuously reinforced and in situ composites; nanocrystalline, quasicrystalline, fine-grained and amorphous metals
- Identify directions for future research such as relationship between plasticity and fracture toughness; features of structure and properties; mechanisms of strengthening and toughening; mechanical behavior

The objective of this Advanced Research Workshop is to bring together scientists from basic and applied research areas to discuss current achievements and outline future directions in research and development of advanced structural materials.

The focus of the workshop is materials and processes of interest of aerospace, automotive and other industries. Topics include materials with high specific mechanical properties, such as composite, fine-grained, nano/quasicrystalline and amorphous metallic materials; novel working and treatment processes; relationships between processing, microstructure and properties; and mechanisms of strengthening and toughening.

Invited speakers from NATO and Partner countries will present their views on the status of today's metals research and introduce future challenges that will be discussed. Latest experimental results and theoretical modeling will be presented in contributed papers. The official language of the workshop is English. Results of the workshop will be published in NATO Science Series, Kluwer Academic Publisher, Netherlands.

Key Speakers:

Eylon, D. Accumulated fatigue-damage characterization in Ti-6Al-4V using TEM and nonlinear-acoustics, *University of Dayton, USA*

Firstov, S. The main tendencies in elaboration of materials with high specific strength. *Frantcevych Institute for Problems of Materials Science, Ukraine*

Frommeyer, G. Ti-Si-Al-eutectic type alloys. *Max-Planck Institute, Germany*

Hartwig, K.T. Powder Consolidation by Equal Channel Angular Extrusion, *Texas A&M University, USA*

Ivasyshyn, O. High strength micro structural forms in titanium alloys processed with rapid heat treatment. *Kurdiymov Institute for Metal Physics, Ukraine*

Jata, K.V. Microstructure and mechanical behavior of friction stir joined/processed structural aluminum and titanium alloys, *Materials and Manufacturing Directorate, Air Force Research Laboratory, USA*

Leffers, T. Atomistic modeling of cross slip and its contribution to the understanding of fatigue and texture in fcc materials. *Riso National Laboratory, Denmark*

Lotsko, D. Quasicrystals in Al alloys. *Frantcevych Institute for Problems of Materials Science, Ukraine*

Mendiratta, M. Refractory metal/silicide multiphase systems for high-temperature structural applications," *UES, Inc., USA*

Menon, S. Microstructural effects and kinetics of high temperature oxidation in Nb-Si base alloys, *UES, Inc., USA*

Milman, Yu. High strength aluminum alloys. *Frantcevych Institute for Problems of Materials Science, Ukraine*

Miracle, D. Opportunities and approaches for doubling structural efficiency of metallic materials. *Materials and Manufacturing Directorate, Air Force Research Laboratory, USA*

Montheillet, F. Dynamic recrystallization of low stacking fault energy metals. *Ecole des Mines de Saint-Etienne, France*

Mortensen, A. Structural metallic materials by infiltration. *Ecole Polytechnique Federale de Lausanne, Switzerland*

Radnoczi, G. Structure and properties of carbon based nanocomposite films. Research Inst. for Technical Phys. & Mater. Science, Hungary.

Rybin, V. Features of deformation and fracture behavior of metals after severe plastic deformation. *Prometey, Russia*

Salishchev, G. Formation of submicrocrystalline structure in large size billets and sheets out of titanium alloys. *Institute for Metals Superplasticity Problems, Russia*

Sklenicka, V. Creep behavior and strength of magnesium-based composites *Institute of Physics of Materials, Czech Republic*

Senkov, O. High strength aluminum alloys for cryogenic applications. *UES, Inc., USA*

Subramanian PR, Development of nanostructured metallic systems - Progress and Challenges, *GE Global, USA*

Valiev, R. Strength and ductility of bulk nanostructured materials*, State Technical University of Aviation Technology, Russia*

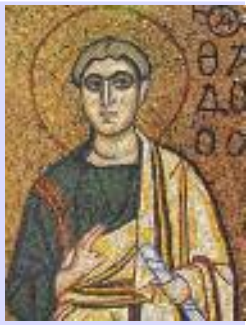
Varin, R. Nanostructured and nanocomposite light metal-based materials for hydrogen storage and superconductivity applications. *University of Waterloo, Canada*

Vasylyev, O. Structure and fracture features of Ti-Si- and Ti-B-based in situ composites. *Frantcevych Institute for Problems of Materials Science, Ukraine*

Ward-Close, M. Prospects for discontinuously reinforced titanium alloys. *QinetiQ Ltd., UK*

Zehetbauer, M. Nanostructured materials by severe plastic deformation: Processing – structurization - modeling. *University of Vienna, Austria*

Venue:



Kyiv is the capital of Ukraine and is located on the picturesque banks of the Dnieper River. As one of the oldest cities in the Eastern Europe, Kyiv has many places of historic interest. Among them are the Kyiv-Pechersk Lavra where the eighth World Miracle - Scythian Pektoral'- is based, the Sophia Cathedral, the Golden Gate, and monuments like Prince Volodymyr and Het'man Bogdan Khmelnytskyi. There are many fine museums in Kyiv including the State Historical Museum and the Museum of Ukrainian and Russian Art. Kyiv is also famous for its theatres, such as the National Opera Theater, one of the best in Europe Philharmonic Orchestra Hall, The Ukrainian Theater, Mariinskiy and Ukrainian Palaces. City tours and visiting of theater & concert halls will be offered to the Workshop participants. For accompanying persons, additional tours will be arranged with a tourist agency.

Hotel Accommodation:

Hotel *Jerelo* is a traditional place for international meetings in Kyiv, and it provides hotel accommodation for the conference participants and their guests. The location provides a nice and productive meeting place close to Kyiv and to Boryspil International Airport. It allows participants to stay together during the workshop days, providing time for productive scientific discussions, sharing meals, and socializing. Tennis courts, an outdoor swimming pool, and a fitness center are all available for the hotel residents. The participants may also enjoy the proximity to lakes and forest.

Travel Details:

The address of the Hotel *Jerelo* is:

4 Kurortna Street
Kyiv, 04075, Ukraine
Tel.: 380-44-431-8398
Fax: 380-44-431-8488

It takes approximately one hour by car or bus from Boryspil International Airport to Hotel *Jerelo*. Bus (or car) transfers from the airport will be provided to registered participants arriving on September 7 and departing on September 12-13, 2003. Hotel *Jerelo* can also be accessed easily from the railway station and the airport by taxi or metro to station "Academmistechko" and next bus #30 or microbus-van #536 and others or metro station "Contractova" and next tram (street-car) #12 to station "1st Line".

From the Hotel *Jerelo* downtown Kyiv can be reached by metro and bus for about 40 minutes ($US 0.2-0.5) or by taxi in about 30 minutes (US $8-10) one way.

Weather:

September is one of the nicest months in Kyiv.
During a day, the temperature is about 20-25 ^{o}C. Rain is possible.

Additional Information:

The electric voltage in Kyiv is 220V. Plugs are of the European type. The major credit cards accepted in Ukraine are Visa, MasterCard and Eurocard.

Liability and Insurance:

Neither NATO nor the Organizing Committee will be responsible for any liabilities incident to the ARW. Participants are encouraged to obtain their own travel and medical insurance.

Call for Abstracts

Scientists and engineers interested in presenting their results are invited to submit a 150-300 word abstract, in English. The abstracts will be published in the Abstract book before the ARW and will be available to participants at the time of on-site registration. Please submit the abstract to Professor Sergiy Firstov by e-mail fsa@materials.kiev.ua (preferred), FAX or airmail. The abstract should clearly describe the purpose and main results of the presentation. The abstract submission template is provided below. Use single space between the lines. The deadline for abstract submission is July 20, 2003. The authors will be notified of acceptance immediately after submission.

Call for Papers

All participants are requested to submit a manuscript for publication in Proceedings "Metallic Materials With High Structural Efficiency" of the NATO Science Series. The length of a keynote paper is limited by 12 pages, and the length of a contributed paper should not exceed 6 pages, including figures and references.

Instructions for preparation of your manuscript can be found at the Kluwer Academic Publishers website: **http://www.wkap.nl/authors/bookstylefiles/wordstyles/.** Please download a self-extracting file wproc8.exe from this website to your computer and then run it by double-clicking on it. It will create 3 files in a directory you specified; these files are: *procsample.doc, vbaKapChap.doc, and vbaKAPproc.dot*. The first file, *procsample.doc*, is a sample of a formatted manuscript. The file *vbaKAPproc.dot* is a template that you should use to prepare your manuscript, and the file *vbaKapChap.doc* contains instructions for using this template. The deadline for submitting the manuscript is September 7, 2003.

All the manuscripts will be peer reviewed and edited before acceptance. Please submit two hard copies and an electronic copy of your manuscript by airmail to Mr. Kelly Brown, UES, Inc. 4401 Dayton-Xenia Rd., Dayton, OH 45432-1894, USA, or bring them with you at the ARW.

Please also fill out attached *Consent-to-publish & Transfer of Copyright Form* and *Author's Data Base Entry Sheet* and return together with your manuscript. The *Author's Data Base Entry Sheet* will then be submitted to NATO, and introduced into a central data-base made available worldwide.

Each invited speaker will receive a volume of the Proceedings and each first-named author will receive 25 offprints of their respective paper free of charge. Our aim is to have the volume published within four months from the time we receive the manuscripts.

Registration fee:

For a participant from industry: **$300**

For an accompanying person: **$150**

For an invited speaker from university or non-profit organization: **free**

Payment: Payments should be sent to Mr. Oleksandr Koval, the ARW Secretary, Kyiv.

The bank account information for the fund transfer is shown below.

Name: **Koval Oleksandr**
Account No: **26209506510018**
Beneficiary bank: **PRAVEX BANK**
Address: 9/2 Klovsky Uzviz
01021 KIEV, UKRAINE
SWIFT CODE: **PRAVUAUK**

Pay through one of intermediary banks in USA:
AMERICAN EXPRESS BANK, NEW YORK, NY
SWIFT CODE: AEIBUS33
CORRESPONDENT ACCOUNT OF PRAVEX BANK
WITH AMERICAN EXPRESS BANK: 741595

Contact: **Oleg Senkov** oleg.senkov@wpafb.af.mil
Kelly Brown Kelly.Brown@wpafb.af.mil
Sergiy Firstov fsa@materials.kiev.ua
Alex Vasylyev vasilev@ipms.kiev.ua